

CENTURYLINK™ TEACHER AND TECHNOLOGY PROGRAM COMPETITIVE SUB-GRANT PROPOSAL ASSURANCE SHEET

Project Title: Modeling History Amount of Request: \$ 4949.00
 Name of Certificated Teacher (or "lead teacher" if more than one): Kevin Ramsey
 Name of School currently teaching at: Leadore School
 District Name: South Lemhi S.D. District Number: No. 292
 Total number of teachers involved (if more than one): 4
 Approximate number of students impacted: 40 Grade level(s) impacted: 5-12
 Content area(s) impacted: Social Studies / Arts / Sciences

I certify that if I receive a CenturyLink™ Teacher and Technology Program Grant –

- I agree to create a 5-minute video highlighting my project for the purposes of sharing best practices with other Idaho K-12 teachers.
- I agree to do one presentation on my project to other Idaho K-12 teachers before December 31, 2014 (by 5 pm MST).
- I agree to submit an electronic report to the Idaho State Department of Education on or before December 31, 2014.

SUPERINTENDENT NAME (PRINT) <u>ERICA J. KEMERY</u>	E-MAIL <u>ekemery@leadore.school.org</u>	TELEPHONE <u>208-768-2442</u>
SIGNATURE <u>[Signature]</u>		
PRINCIPAL NAME (PRINT) <u>ERICA J. KEMERY</u>	E-MAIL <u>Same</u>	TELEPHONE <u>Same</u>
SIGNATURE <u>[Signature]</u>		
TEACHER OR LEAD TEACHER NAME (PRINT) <u>Kevin Ramsey</u>	E-MAIL <u>kpramsey@leadore.school.org</u>	TELEPHONE <u>208 768-2441</u>
SIGNATURE <u>[Signature]</u>		
TECHNOLOGY DIRECTOR (PRINT) <u>Kevin Ramsey</u>	E-MAIL <u>kpramsey@leadore.school.org</u>	TELEPHONE <u>208 768-2441</u>
SIGNATURE <u>[Signature]</u>		

Submit one digital copy of your proposal (PDF format) by January 10, 2014 (by 5 pm MST) via e-mail to:

Todd Lawrence
tlawrence@sde.idaho.gov
208.332.6959

Proposals submitted after that date and time will not be considered.

***Only one PDF file per teacher applicant will be accepted (this includes the assurance sheet).**
Faxes will not be accepted.

Idaho State Department of Education

CENTURYLINK™ TEACHER APPLICATION 2014

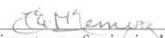
CenturyLink Teachers and Technology Program
Applicant certification

As an applicant for a CenturyLink Teachers and Technology grant, you are required to certify the following statements. Please ensure that you work with the necessary individuals within your school or district to ensure that the following statements are accurate.

1. After reasonable investigation (such as conferring with the school's network administrator), the applicant does not anticipate that the proposal, if selected for award, would significantly increase the school's network capacity needs.



Signature of applicant



Signature of principal


8 Jan 14

Date


9 January 2014

Date

2. The applicant is not involved in any procurement decisions regarding the purchase of the school's telecommunications and internet services, including its participation, if any, in the E-Rate program.



Signature of applicant



Signature of principal

8 Jan 14

Date

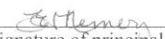
9 January 2014

Date

3. The applicant confirms that receiving this grant will have no impact on and will not be considered in E-rate procurement decisions for their school or school district.



Signature of applicant



Signature of principal

8 Jan 14

Date

9 January 2014

Date

Applicant's Name (please print): Kevin Ramsey

City and State: Leadore ID

School Name: Leadore School

School District: South Lemhi Schools #292

Current Innovation

I have taught at the Leadore School since 1998. At that time, I was asked to teach many different subjects I was unfamiliar with; life skills, yearbook, welding, puppet making, math, physical science, creative arts, basic shop. Confused as to why I was assigned these classes, I learned that since our school was so small and I was found capable of teaching these courses, the district wanted to offer more electives for our students.

Fast forward a few years. Teachers in the state of Idaho are now required to be highly qualified in their specific field of interest. These requirements crippled our small school by eliminating almost all of the few electives we had. This was especially stressful for me because without the elective classes, how would I remain on staff? I was offered the position to be the Social Studies/History/Government teacher which I accepted and became highly qualified as needed. I have developed a great love for my new position and I work hard to present "history" in new ways using online tools, simulations, projects and technology that captures student interests.

At present, there has been another shift in education as the state adopts the Common Core Standards. These standards are rigid guidelines that require teachers to bring a larger variety of materials into the classroom to promote critical thinking skills. With this shift, I have incorporated more demanding projects that have given students not only a new perspective of history but also a personal connection that encourages them to seek out more information and discover new ideas and concepts.

A recent project developed for our social studies classes is a progressive research multimedia narrative. When this project was first introduced, my students were required to choose a technology (planes, tanks, subs, ships, etc.) implemented during war time and compare that specific technology to different eras in order to trace the evolution and improvement of said technology. Over a period of two weeks, students then researched their chosen technology and created a personalized narrative using hardware, software, and Web2.0 tools in the form of a documentary, training manual, journal or letter. In the WebQuest instructions, [Historical Documentary WebQuest](#), there are two examples of past student work. These two examples were created using pre-installed Windows Movie Maker and an audio editor called Audacity, downloaded from the Internet to create a 5 minute project. In the last two years, I have included the option to write about concepts, cultures, politics, or home front in order to cover more categories and allow for students who wish to focus on something other than war technologies. These projects always exceed expectations and have given my students a sense of accomplishment, but I feel there needs to be more.

Typically the Social Studies are not the first subjects that come to mind when talking about S.T.E.M programs. My intention is to challenge this notion. I plan to incorporate modeling into these projects and others. Modeling will add desperately needed "hands-on" activities for our school. In addition to the research that is being done, students will learn life skills that will allow them to do much more than can be expected by research alone. By constructing models, students will learn how to read blueprints, connect to a design process, learn new core vocabulary, develop an understanding of symbolism as they choose ornamentation for their models, learn painting techniques, and ultimately regain some of the kinetic, "hands-on" courses that were lost when our electives were dissolved.

The intention of this project is not to make every student become a master model builder. My vision is to allow students to take part in a process that will become beneficial to them over a lifetime of experience. Using the Common Core curriculum to its full potential will open doors for higher educational experiences and cause students to be more rounded. This ability to confront problems they may encounter in their future will allow for much more pleasant experiences. I expect that what students accomplish in my class will offer a greater advantage if they pursue future S.T.E.M courses. The goal of this program is to train students to see choices from many perspectives and comprehend the outcomes of choices made.

Project Narrative

Project Description

Youth today are plugged in almost from the time they begin to walk. Technology has opened numerous paths in education which students can use to pursue jobs that may not even exist today. Education as a whole is shifting to a computer-based platform, thus leaving a basic “hands-on” element of creativity behind. This is not to say that there is no creativity involved in using computers; far from it. But absorbing knowledge from a computer screen is not necessarily the best instructional method for every student. Some students truly need a hands-on approach to learning. Steps that can help struggling students to scaffold learning from hands-on manipulation to fluency with abstract representation and reasoning need to be established. Modeling History is a project that introduces students of middle school age to construction and design processes through a hands-on approach. Connecting technology from the past to the present will stimulate a desire to learn more about their surroundings, while building models brings in hands-on learning as the basis for developing fluency in the mathematics and engineering concept of spatial relationship and in ability with creative envisioning. When building a model, one not only experiences a new sense of imagination and creativity that will flow from one subject to another, but also one develops through kinesthetic learning one’s sense of size and shape in space and the ability to perceive spatial relationships in the imagination.

Students in this program will follow a stair step pattern of learning. Starting in junior high students will build simple models as an introduction. As they advance, students will be assigned more complex models and three-dimensional (3D) projects that will challenge them to be more patient, collaborate with others, observe new details about their surroundings, and have a tangible product at the completion of the project. When they reach their junior year in high school, they will transfer their talents to the computer by creating 3D virtual models. They will also connect to local Idaho history by researching some of our local ghost towns’ locations and structures and then recreating them in both computer and solid models. Using SketchUp Pro software, students can recreate these ghost towns and then submit their work to Google Earth for consideration as additions to that site.

Implementing the Common Core Standards is a critical component of this program. Questions such as, “Why did the Red Baron paint his plane red?” will be a part of the curriculum. We will follow that with, “What did we learn about that today and how can we apply it to the future?” If I can bring one idea that will keep students in school and interested in learning and advancing, then my goals will have been met. With our small school atmosphere there are opportunities around every corner to learn about our world, but we can only maximize these opportunities if the student feels that what they are learning in the classroom will be truly relevant later on. Modeling in a scaffold based program focused on developing the mathematics and engineering concepts of spatial relationship, creative mental envisioning, actual 2 dimensional planning and drafting, and 2- and 3-dimensional modeling that integrates Core concept learning in social studies, science, and English language arts will build skills that will last a lifetime and can be directly applied to post-secondary learning and employability.

Students in the middle school, grades 7-8, will begin their model experiences with beginner skill level models using internet sites such as MegaHobby.com. Models will correlate with the unit topics during their history class where they will build one model per semester. This will allow students to gradually build their spatial relationship skills. Since this will be the first exposure to modeling for many students, instruction will be given from the teacher by example as tips and techniques are established. Research, while important to the units’ learning goals will not outweigh the foundational engineering skills that develop as we focus on the construction of the model.

High school students will follow the same structure during the year with added emphasis on research, creativity, and the more abstract representations that computerized modeling affords. During some classes, the use of Super Sculpey modeling clay will be used in order to create original models. In the past, we have built Canopic Jars and sarcophagi during an Egyptian unit and Totem poles for Native American studies. High school students will acquire more advanced models, focusing on historical

accuracy with use of insignia details. Comprehension of those details such as, “Why were battleships painted with tiger stripe patterns when they sailed on the ocean?” and other intriguing questions will be important. We will also explore modern day questions and concerns relating to our political policies. Now that NASA has been disbanded, what is the next step toward space exploration? How do physics relate to the structure of a rocket ship? As students advance their skills and understand basic and advanced techniques of design, we will move into digital modeling. The Idaho State Department of Education has provided public schools with access to SketchUp Pro. In order to effectively use that program, I will need to upgrade two of my classroom computers to increase the compatibility for the software and then we will be able to mimic our creations virtually and make modifications that could be used in modern industry.

A part of my instructional plan focuses on how to connect our past to the present. One project I would like to begin as a result of this grant would be to research the ghost town of Junction, Idaho that existed before Leadore was established. There are still foundations of the old buildings and several pictures that have been collected from some of the old timers in the area. With SketchUp Pro and the help of Google Earth, we will bring these structures back to life. We will travel to Main Street in Junction and collect GPS coordinates, then using the historical photos, create a 3D model of the old town site.

As a final part of our virtual model units, what would be more rewarding than printing out a 3D copy? 3D printing has hit main stream education and become more affordable. After students design and build their models (planes, trains, rockets, or buildings), we will have the capability to print our models using the newest state of the art 3D technology in order to display, run tests on or create a 3D topographical map with buildings of what a ghost town once looked like. 3D printing has been out of reach for a district like ours, but now our students will be able to leave Leadore with a greater knowledge and developed skills in cutting edge technology. This will open many doors for them to future education and employment opportunities.

Project Team

Leadore School has its unique challenges because of its size, and we use that size to the best advantage. We focus on individuals not departments, and on instructional excellence that meets the needs of every student. We give each of our students as many advantages as possible. As a result, besides myself, I have brought on board three other teachers: Shane Matson, our science teacher, Denise McRea, our junior high English and Art teacher, and Mary Cory, our English, World History and Common Core development coach, to be a part of this project. Each teacher brings a unique perspective about how some aspect of model making will work best for our students in a particular subject. Because we all work with the same students on a daily basis, we know their strengths and weakness. Our close relationships with our students help us to cross over into each other's subjects to provide a well rounded and consistent atmosphere for the students to excel. Erica Kemery, our superintendent/principal, fully supports this project. She works diligently to find new ways in which she can bring new technology to our school so our students, who are 68.57% low-income according to Title 1 guidelines as well as rurally located, may compete across the board with any students in the state and be well prepared to become the leaders of tomorrow after graduation. As each of our team members work together, we will bring an awareness of basic build processes along with writing and presentation skills that will have multiple applications in the future lives of our students.

Feasibility

This project uses one of the most effective educational methods: A simple stair-step approach that advances from kinesthetic to abstract learning (from basic to advanced skills) and accommodates training individual students according to their unique needs and their interests. This will make this initiative an innovative and highly successful S.T.E.M. learning program which is solidly grounded in known learning principles. Purposeful cross-curricular applications of Core Standards in the Arts, Sciences, History, and English will confirm the value of Modeling History for many years to come. Using classroom funds, the district will supply resources necessary in order to continue the Modeling History

project.. Obtaining the tools for the program has been our most difficult obstacle. These grant funds will enable us to get this dynamic learning program operating. Integration into regular classroom curriculum of our top-notch, highly qualified teaching staff will ensure that our students continue to raise the achievement bar. The State Board of Education named Leadore School one the top seven of more than 700 schools in Idaho last year. Our district has determined to maintain that winning edge and sees this as a strong player in accomplishing that goal.

Sustainability

One common question that is asked when talking about this great project is, “How come you have not done it until now?” The obvious answer is that because of spending cuts experienced for the past few years, we have not been able to consider the project until recently. The next question that begs an answer is, “How will you keep the program going after the first models are bought and made?” While the district will support the program with future classroom funds, expanding and improving the program has been a concern, but the answer comes to us directly from the students’ creativity. As I was developing this request, my students suggested a solution for sustainability by volunteering to create items to “print” out with our MakerBot 3D printer to sell as one of a kind booster items. With the funds generated, we can replace materials, purchase new products in the future, and generally make the project better and better over time.

School/District Support

By now it is understood that even though we are a small district, we make every effort to offer our students the best education possible. Due to our small size, our district may not be able compete financially with larger schools. We make do with what we have, emphasizing a strong work ethic! Because we are a small district we are often over-looked during funding opportunities, yet our students often outperform students in larger school districts. Student achievement is our number one goal. This program will embed a foundation of mathematics and engineering learning that will be there far beyond the latest technological toy that comes along. This ethic allows us to teach our students to respect each other, our facilities, and their education. As a result, our students are some of the top in the state. The superintendent has agreed that once this program is begun, the district will be glad to support it as a curricular program with regular classroom funds. Support is also approved for student-led fund-raising efforts for future enhancement, such as obtaining a wider selection of color cartridges for 3D printing. The board of trustees is in full support of learning projects and programs that engage student interest and drive continued student achievement.

Anticipated Outcomes/Impacts

The Leadore School is an academically oriented school. We do not have enough students to be competitive in athletics. We are remotely located, which doesn’t offer many options for job training/shadowing. We are lacking in many programs that larger schools take advantage of and yet we succeed. Our students know the meaning of work, respect, and freedom. When they are not at school for 12 hours a day, they are working with family and friends on ranches or local business. If that were all they take with them into the world when they leave our walls, I feel that would be enough to take them very far in life. We are diverse in student population and learning levels. We also include everyone in anything we do instead of placing athletic or educational-oriented restrictions on this group or that. Modeling History sets a general standard that allows boys and girls of any background or culture a chance to learn basic principles and techniques that they will add to during their educational career. This project will expose them to something that will be very foreign to them at first but over a short time, they will cherish and personalize what they learn and desire to share it with others. The outcome will be that students will nurture a desire to do better than they did before as they move to more advanced projects and be exposed to new technology. When they succeed, they will be better students and look for ways to excel.

Scope and Sequence

Goals and Objectives

Modeling History will introduce students to the processes of design, construction, and historical technologies used throughout history. Historically, each culture adds a unique attribute or technology to what we currently enjoy today. Building models while researching reasons and applications associated with our historic past will help students to personally internalize history by seeking out new paths they will not get in a traditional textbook. As a supplement to the historical aspect of this project, students will gain a basic understanding of engineering principles while applying science and math skills learned in their other classes. All classes will have more meaning because instead of each class being separate and tedious, they will be united and exhilarating, fostering a desire to be in school in order to learn more about our surroundings and future.

This project's goals are:

- Follow design processes of a historical technology, learning basic to advanced application skills.
- Apply S.T.E.M. principles in a non-typical setting.
- Build techniques and talents for design.
- Collaborate with others to accomplish individual and team goals.
- Construct unique items using new technologies.
- Enable an attitude of "Learning for Life."

Date	Milestone	Action Item	Task	Person Responsible
May 2014		Receive grant and purchase supplies		Kevin Ramsey
Aug. 2014		Meet with team teachers to coordinate schedules	Determine when the junior high and high school students will cover topics that will crossover in content.	Team members
Sept.- Dec. 2014	Introduction to modeling and design for JH students	Students will develop technical skills associated with the creation and design of fabrication	Build simple models in class	Kevin Ramsey w/ help from Denice McRea and Mary Cory
Sept.- Dec. 2014		Collect articles for video and presentation of project	Build a library of articles including interviews, students success and future goals	Team members
Oct.- Dec. 2014	SketchUp Pro introduction	HS students will be introduced to SketchUp Pro by doing basic operations and designs		Kevin Ramsey
Jan.- May 2015	3D printing	Students in all classes will be trained on the general use of the MakerBot system as class needs dictate	Advanced students will begin creating 3D models for Senior projects, maps, and class specific projects	Team members
May – June 2015		Summarize project	Team meets together to review the year's activities and plan the next year	Team members

Budget Narrative

Currently, I teach 6 different subjects including Robotics. I have attempted this project some years ago but due to financial constraints, I purchased the models from my own pocket. This grant will allow the district to purchase needed supplies that will be use to make models for many years to come. As the budget is presented, you will see that the purchase of models is limited to existing funds that are left over. Our district and donated money will be used to purchase new models in the future.

X5A Modular Computers

In order to run SketchUp Pro software, as well as accommodate the multimedia demands required for this project, we have chosen the Xi3 Corporation X5A Modular Computer. Standard features include 1.8GHz dual-core x86-based, 64-bit processor, 2GB DDR2 RAM, 32GB SSD internal storage, and upgradable. The biggest feature we focused on was its energy use. Standard computers run on close to 200watts under normal circumstances. The X5A runs on 20watts, saving the district close to \$100/yr with these two computers. We hope to eventually replace all of our computers in this manner to save the district even more.

ViewSonic 24-inch Monitor

The monitors that accompany our current computers are smaller 15" standards. Attention to detail is needed when using CAD-based software. We will replace the existing monitors with 2 newer models.

USB Headset

Headsets need to be purchased that will be compatible with the hardware that is using it. In the past, students have needed to record their projects using broken or personal equipment. Headsets will be used not only for multimedia projects but to collaborate in distant learning environments with other students, teachers, mentors or relatives while conducting need research for this project and others.

Badger Airbrush Kit and Modeling Supplies

This kit contains the Model 200 airbrush, hose and compressor. This tool will be a great benefit for our school allowing exposure to a new style of art form. Cement, paints and assorted tools are necessary for modeling. Tools make the project.

Super Sculpey

The ultimate sculpting compound! Its excellent tooling qualities make it the preferred choice for casting and all types of sculpture. Super Sculpey is a semi-transparent beige color and can be sanded drilled carved and painted with water based acrylics after it has been hardened in the oven. Non-toxic.

MakerBot: Replicator 2

This 3D printer allows virtual construction to come to life. The applications are endless with this device which allows for virtual/tangible prototyping and creativity solutions. This item will place us at the top of the curve with multiple education opportunities.

Models

Students will be given a budget to use when looking for a model. They will then go through the process of purchasing the item online. This will add another learning environment to the project.

Budget Spreadsheet

Activity	Materials and Supplies	Capital Object	Quantity	Price/unit	Sub Total
Multimedia creation		X5A Modular Computers w/ Monitor mounts and Monitors	2	748	1,496
Narration		Microsoft LifeChat LX-3000 Headsets w/ microphone	4	21	84
Modeling		Badger Airbrush Kit including brush, hose and compressor	1	329	329
Modeling	Cements, tools, paints	These costs are added into the budget of student's model selection so they are purchased according to the student's needs.			
Sculpting	Super Sculpey modeling polymer		24lbs	160	160
Prototyping		MakerBot:Replicator 2 3D printer	1	2200	2,200
Modeling	Student project models	Each student will have a budget that they will purchase need materials under teacher consent	17	40	680
			Grand Total		4,949